



# CARAVAGGI

MACCHINE INDUSTRIALI

## INSTRUCTION & SAFETY MANUAL SPARES LIST

### BRUSHWOOD CHIPPER AND SHREDDER

# BIO 600

VERSIONS :

- electric (E)
- diesel (D)
- tractor (T)



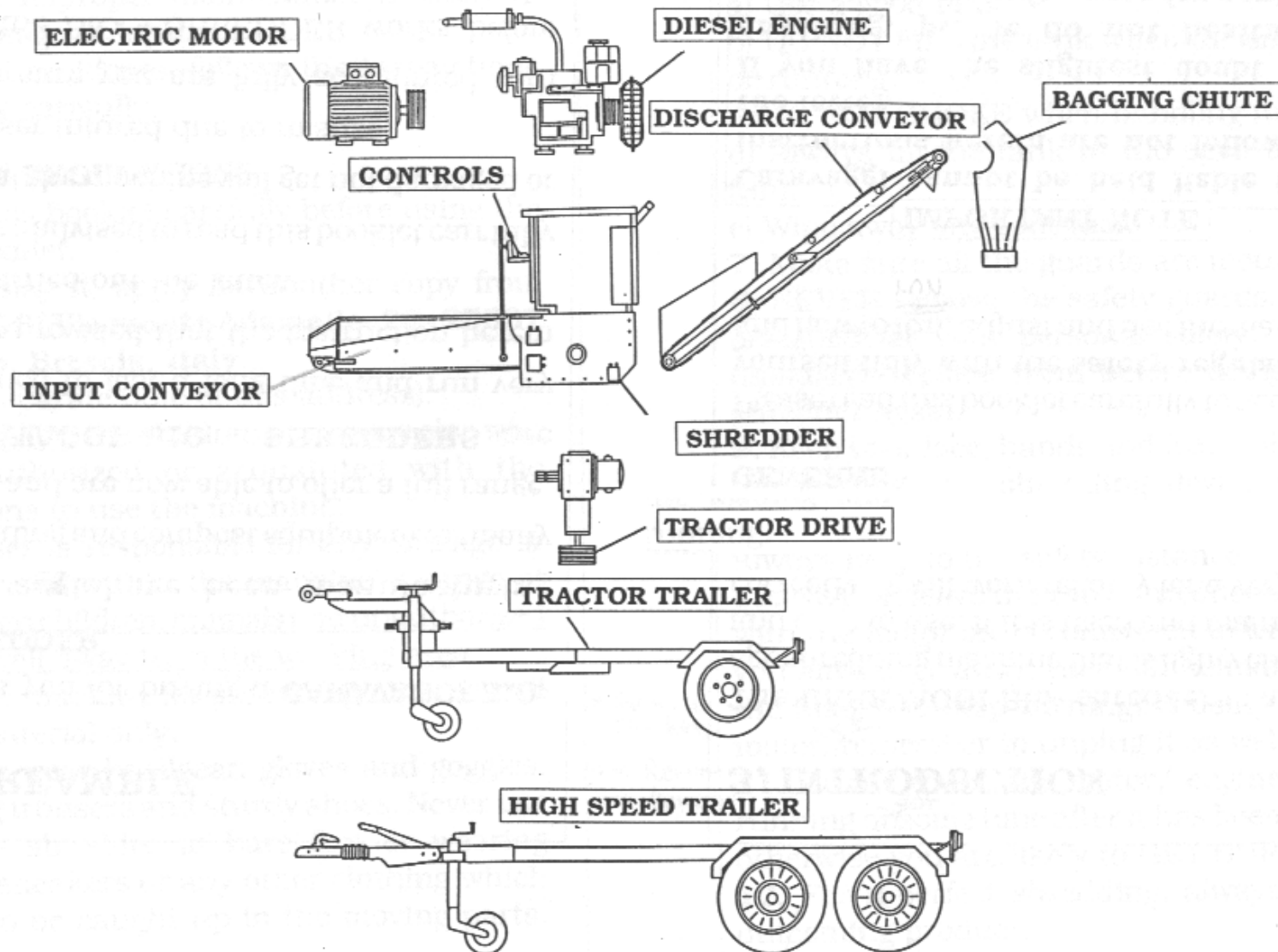
# **INSTRUCTION & SAFETY MANUAL**

**(Bio 600 D-T)**

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# 1. DESCRIPTION OF THE MACHINE



## 2. PREAMBLE

Thank you for buying a **CARAVAGGI BIO-SHREDDER**.

Caravaggi have been manufacturing shredding and compost equipment for many years and are now able to offer a full range. **CARAVAGGI BIO - SHREDDERS** are designed to last a long time and run very safely provided that the instruction herein are carried out the letter.

You are advised to read this booklet carefully so that the machine will get not damaged or the user injured due to misuse.

Make sure you are fully acquainted with how the BIO - SHREDDER works before using it.

## 3. INTRODUCTION

The **CARAVAGGI Bio- shredder** is a new-age shredding machine that is highly efficient and easy to use. If it is used and maintained correctly, it will work reliably for a very long time.

### GENERAL

Please read this booklet carefully to acquaint yourself fully with the **safety regulations**, and how to run, adjust and use the machine.

#### IMPORTANT NOTE

**Caravaggi cannot be held liable if the instructions herein are not followed to the letter.**

**If you have the slightest doubt about anything, please do not hesitate to contact the manufacturer for advice on how to proceed.**

## 4. SAFETY REGULATIONS

Misuse or improper maintenance is likely to cause damage or injury.

To prevent accidents, follows the instructions below very carefully.

### GENERAL REGULATIONS

**1.** Read this booklet carefully before using the Bio - shredder.

If you mislay it, apply for another copy from **CARAVAGGI Via monte Adamello, 20 - 25037 Pontoglio, Brescia, Italy.**

(Make a separate note of this address).

**2.** Do not allow the children or anyone else who is not authorized or acquainted with the instructions to use the machine.

**3.** The user is responsible for any damage or injury caused within the machine's range of action. Keep children, animals and unauthorized persons well away from the working area.

**4.** Use the machine for shredding organic and vegetal material only.

**5.** Always wear headgear, gloves and goggles. Wear long trousers and sturdy shoes. Never use the Bio - shredder in bare feet or wearing sandals, sneakers or any other clothing which is likely to be caught up in the moving parts.

**6.** The fuel is highly flammable and volatile, which means there is the risk of explosion.

Remember the following:

a) Use a good tank.

b) **DO NOT FILL** the tank when the engine is hot or running.

c) **DO NOT SMOKE** when handling fuel.

d) Always fill the tank in the open air using a funnel.

e) Wipe away any spilt fuel.

**7.** Make sure all the guards are mounted.

**8.** **NEVER** remove the safety guards, which are designed for your personal safety. If they get damaged, replace them before using the Bio - shredder again.

**9.** Keep your face, hands and feet well away from the loading and shredding device when it is running.

Always keep to the safety distance.

**10.** **NEVER** leave the Bio - shredder unattended with the motor on or connected to the tractor. If you have to go away, turn off the motor, wait for the blades to stop turning, remove the key. If using an electric motor, remove the key and remember to unplug it as well.

**11.** Do not touch the motor/ engine when it is running or some time after it has been turned off, otherwise you are likely to **GET BURNT**.

**12.** For perfect shredding, always check the out coming product.

**13.** Frequently check that all the screw, nuts and bolts are tightened properly.

**14.** Keep the Bio-shredder free from leaves, oil or other materials to prevent the risk of fire. Clean any oil off the motor using a water jetter.

**15.** DO NOT alter the rpm of the motor. If it needs to be adjusted have it checked by an authorized dealer.

**16.** This Bio-shredder has been built to comply with all the latest safety standards. To keep it in safe running order, always use original parts and spares.

**17.** Only perform the routine maintenance work specified herein.

Contact the manufacturer for major repairs or other maintenance.

**18.** Before starting up, make sure there are no foreign bodies in the shredding chamber to prevent it from starting up and rotating properly.

**19.** Remove any branches blocking the loading belt.

**20.** For Bio-shredders with built-in motors, always check the motor runs properly and follow the manufacturer's recommendations.

**21.** Warm up the machine briefly and then run it at top speed.

**22.** Whenever possible, insert woody materials through the side chute which is 13 cm wide.

Do not attempt to insert anything larger than this.

**23.** Use a perforated screen when handling dry or dump products.

Use a bar screen when handling wet or soggy products.

**24.** When moving the machine by road, position it as follows:

- unloading belt folded up;
- horizontal loading belt towards the vehicle;
- side chute open and secured.

#### **IMPORTANT NOTE**

**25.** In the case of breakdown or sudden accident, first reduce the number of rpm and then stop the motor, if necessary.

## 5. TRANSFERS & SIMBOLS



### INSTRUCTION FOR USE

Consult the handbook carefully before use. Take careful note of the symbols shown here to prevent injury or damage to the machine. Always wear the protective clothing specified in the handbook.

Start the machine empty and insert the material when it has reached the maximum numbers of revs. When the work is finished, check that all the material has come out of the shredding chambers before you stop the motor. Refer to the handbook for routine and extraordinary maintenance operations. Not to be used by children or invalids.

### INSTRUCTION D'UTILISATION

Consulter attentivement le livret avant la mise en fonction.

Contrôler, vérifier l'état des courroies des marteaux, lames et coussinets.

Démarrer la machine à vide. Introduire le matériel quand elle a obtenu le maximum de tours.

Arrêter le moteur avant d'effectuer l'entretien. La société décline toute responsabilité civile pour la manumission d'utilisation du broyeur.

### BEDIENUNGSANLEITUNG

Vor Gebrauch Bedienungsanleitung aufmerksam durchlesen. Genauestens der Bildbeschreibung der Anleitung folgen, um Personen- oder Maschinenschäden zu vermeiden.

Sich mit individuellen Schutzvorrichtungen, wie aufgezeigt, versehen. Die Maschine in leerem Zustand in Gang setzen und das Material einführen, wenn die Höchstumdrehung erreicht ist.

Bei Arbeitssende sich vergewissern, daß alles Material aus der Mahlkammer entfernt ist, bevor der Motor abgestellt wird.

Die Bedienungsanleitung für normale und besondere Maschinenwartung konsultieren. Kinder und Untauglichen ist die Benutzung untersagt.

### ISTRUZIONI PER L'USO

Consultare attentamente il manuale d'uso prima della messa in funzione. Osservare scrupolosamente la simbologia riportata sulla presente scheda per evitare danni all'operatore ed alla macchina.

Munirsi di protezioni individuali come da manuale. Avviare la macchina a vuoto ed inserire il materiale quando essa ha raggiunto il max. dei giri.

A fine lavoro, accertarsi che tutto il materiale sia uscito dalla camera di macinazione prima di arrestare il motore. Controllare il manuale per le operazioni di manutenzione ordinaria e straordinaria alla macchina. E' vietato l'uso della macchina a bambini e disabili.

### INSTRUCCIONES

Leer atentamente el manual de instrucciones antes de poner la máquina en marcha. Seguir escrupulosamente los símbolos indicados en este ficho: se evitarán así posibles daños al operador o a la máquina.

Utilizar las protecciones personales según las indicaciones del manual. Arrancar la máquina en vacío e introducir el material después de haber sido alcanzado el número máximo de vueltas.

Al final de la elaboración, asegurarse de que todo el material haya salido de la cámara de trituración antes de parar el motor.

Consultar el manual para la realización de operaciones de mantenimiento ordinario y extraordinario de la máquina. El uso de la máquina está prohibido a niños e inválidos.



TYPE	øA (cm)	øB (cm)
BIO 200	3	8/9
BIO 300	6/7	—
BIO 400	7	13/18
BIO 600	8	13/18



## 6. START UP

1. Stop the Bio-Shredder in the working position and lock the brake by pulling the brake lever (see Fig. 1).
2. Rotate the machine into the best loading position.
3. Close the chipper hopper and secure it (see Fig.3).
4. Place the unloading belt in the working position, slowly and carefully opening it out with the lever (see Fig.4).
5. Check that the loading belt is free of residue.
6. Check that the mains voltage is the same as the motor rating. (Electric model).
7. Check that the oil level is within the scale (see Fig.5).
8. Start that the machine as follows:
  - a) Check that the machine is ready to operate and turn the start key (Fig.8) for diesel engines.
  - b) Activate the tractor's power take-off and the Cardan shaft which is suitably protected.

c) Activate the automatic electric panels. For the electric version, activate the rotor first and then the hydraulic unit.

9. When the motor has reached top speed, wait a minute or so before you start loading material onto the belt.
10. Pull the loading belt lever to rotate the belt toward the shredder and commence loading (Fig. 6). (Ø max. 8 cm.)
11. Wait for the material to leave the unloading belt.
12. Then continue to load the material.
13. Turn the spool valve hand-wheel to adjust the forward speed of the belt and the drive roller (see Fig.7.). Never use the valve to stop the belt;
14. If you overload the belt, do not turn the machine off. All you must do is to adjust the distributor speed. Push the lever towards the Bio-Shredder to reverse the belt or centre it to stop the belt (see Fig.6.)



**PARKING BRAKE - HAND LEVER**

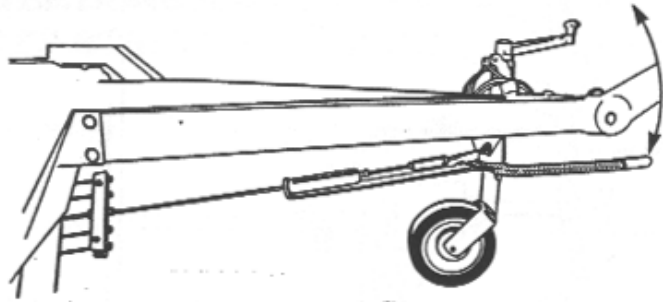


fig. 1

**CONTROL LEVER**

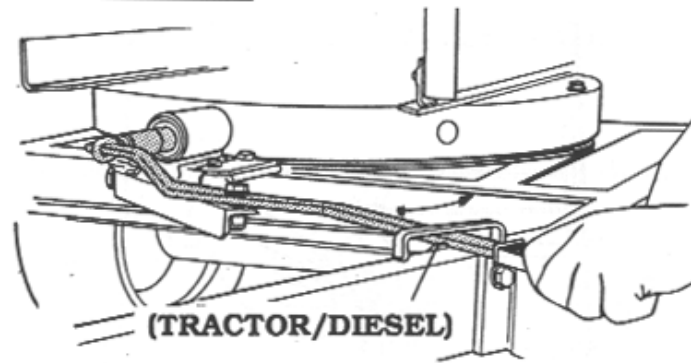


fig. 2

**CHIPPER HOPPER**

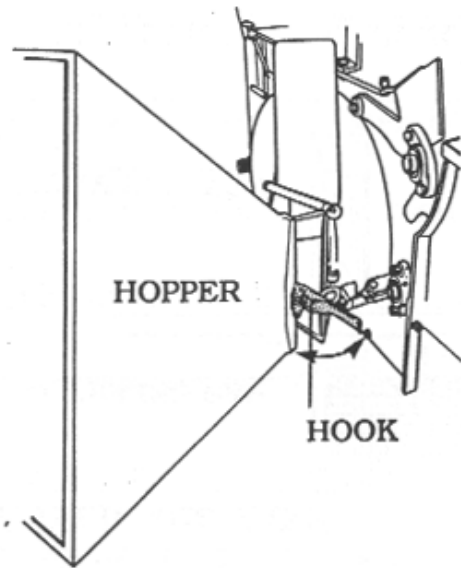


fig. 3

**OPENING OUT THE UNLOADING BELT**

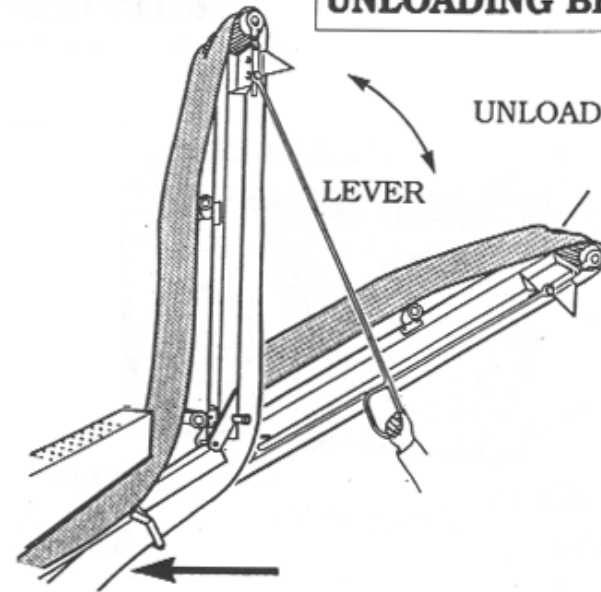


fig. 4

**HYDRAULIC OIL TANK**

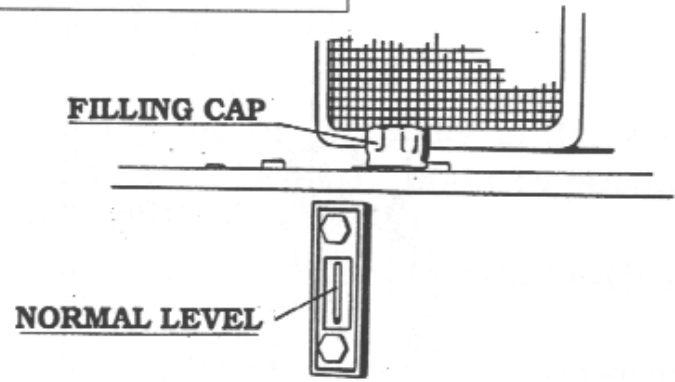


fig. 5

**CONTROL PANEL**

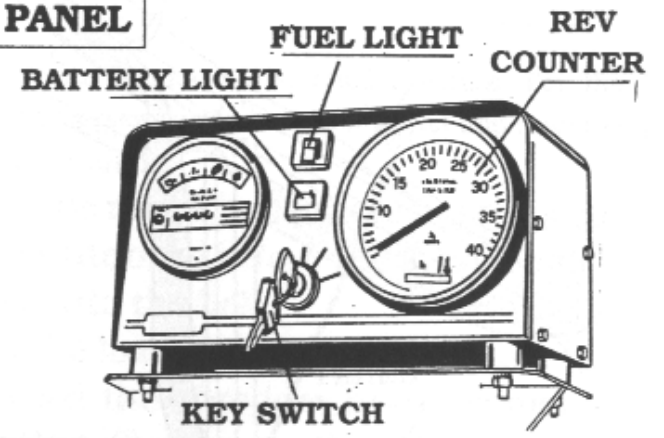


fig. 8

**LOADING BELT CONTROL LEVER**

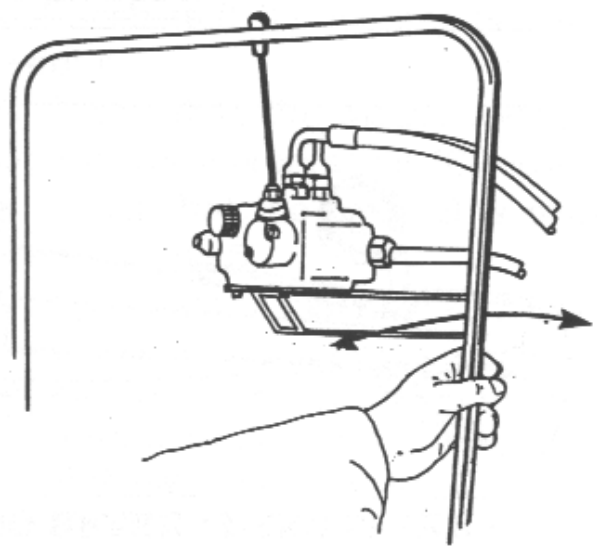


fig. 6

**SPEED REGULATOR**

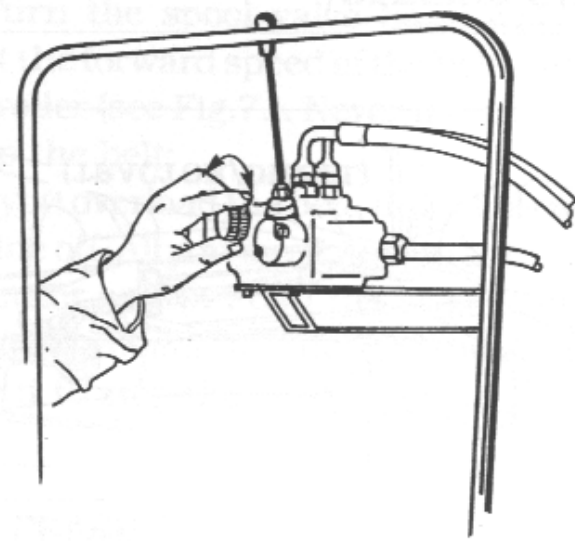


fig. 7

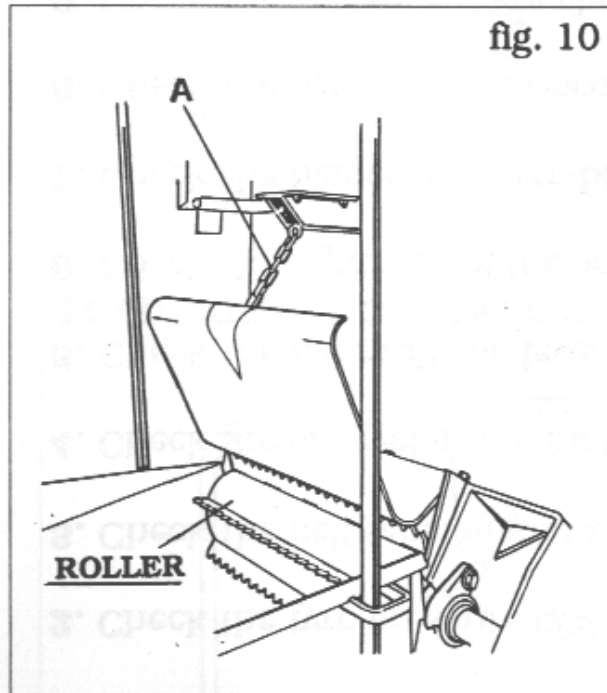
## **7. ROUTINE MAINTENANCE**

**TO BE DONE AFTER EVERY DAY'S WORK. FOLLOW THE INSTRUCTIONS IN SEQUENCE. REMEMBER TO KEEP STRICTLY TO THE SAFETY RULES.**

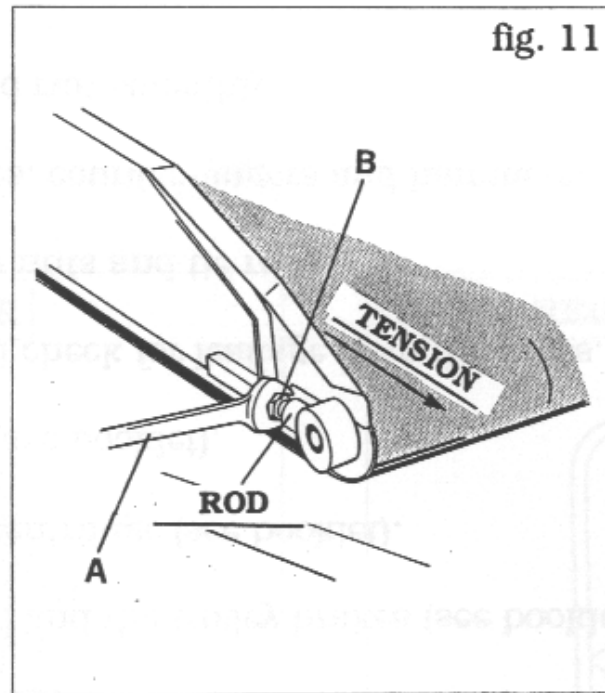
1. Grease all the rotation points, supports and joints with a suitable amount of the right grade of grease.
2. Check the tyre pressure (2.2 bar) and the trolley brakes (see booklet).
3. Check the belt tension and the centrifuge (see booklet).
4. Check the oil level in the motor (see booklet).
5. Check the hydraulic oil level and check for leakage from the pipes, fittings and valves.
6. Check the tightness of the screw nuts and tie rods.
7. Check the blades, counter-blades, counter-fingers and hammers.
8. Check the belts are not worn and run smoothly.
9. Check the belt rollers are clean.
10. Clean the machine all over thoroughly.
11. Check the tractor transmissions (joints, pulleys and overgear).
12. Check all the safety devices.

## 8. EXTRAORDINARY MAINTENANCE

CARRY OUT THE MAINTENANCE COMPLYING EXACTLY THE SAFETY REGULATIONS

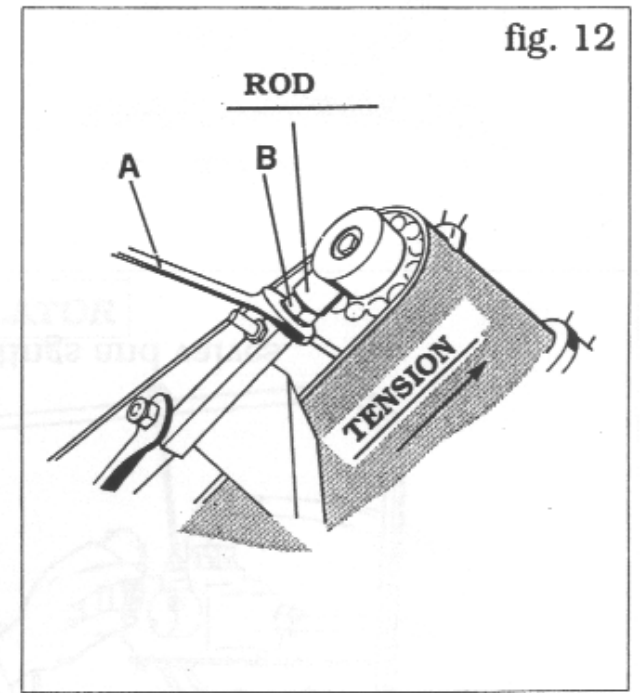


1 - BEFORE OPERATING ON THE LOADING BELT HOOK THE CHAIN "A"



2 - HOW TO TIGHTEN THE LOADING BELT:

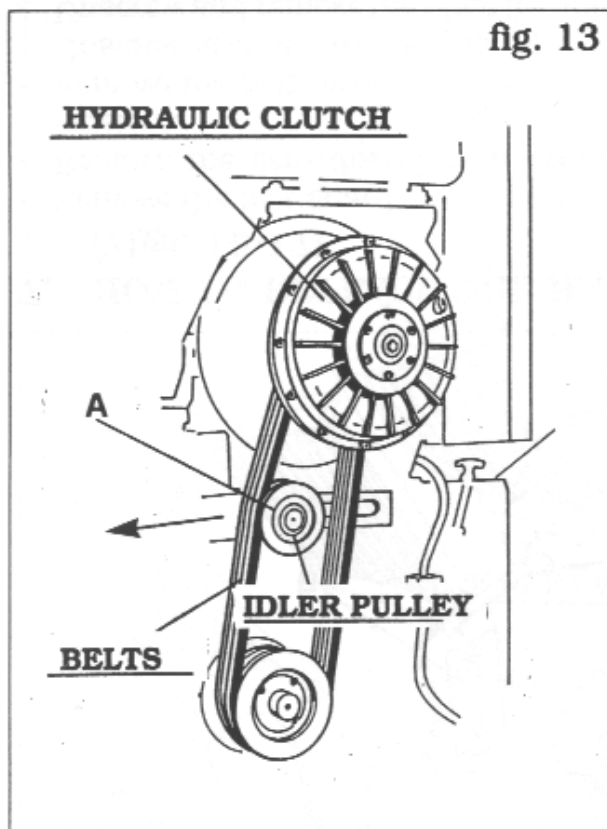
Use the key "A" and operate on the rod nut "B" and lock the counter-nut.



3 - HOW TO TIGHTEN THE UNLOADING BELT

Use the key "A" and operate on the rod nut "B" and lock the counter-nut.

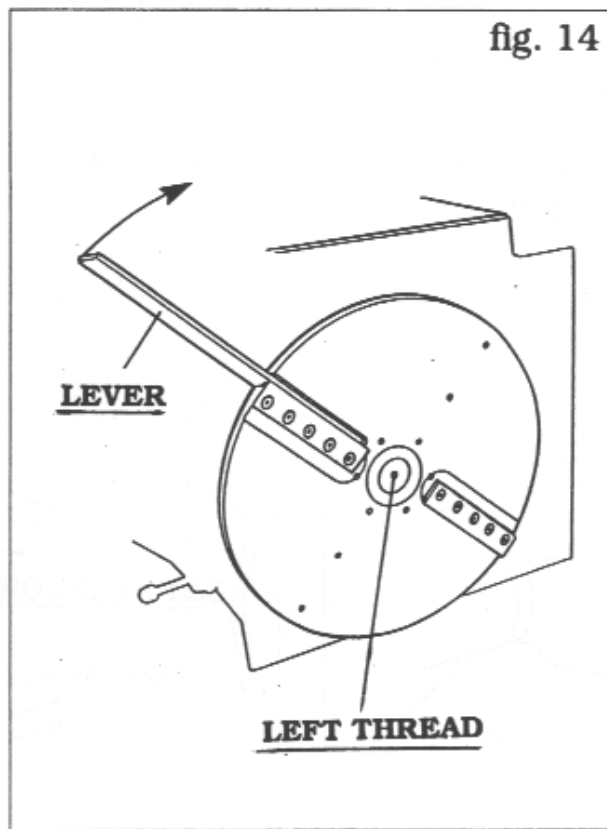
fig. 13



**4 - BELT TENSION**

- Remove the protection cover.
- Unloose the tightener screw "A".
- Pull the tightener in the arrow direction.
- Lock the tightener screw.

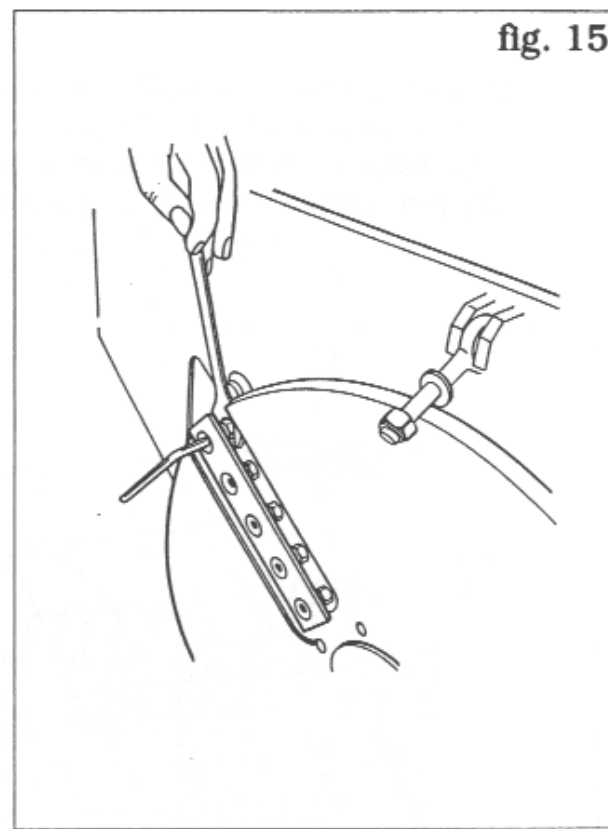
fig. 14



**5 - HOW TO REMOVE THE CHIPPER DISC (Fig. 14)**

- Lock the rotor.
- Turn clockwise with the lever (see arrow) and then unscrew.

fig. 15



**6 - HOW TO REMOVE THE BLADE (Fig. 15)**

Unscrew the nuts using a spanner. Always fit and tighten the self-locking nuts after replacement. (Replace with new nyloks as they are a single life nut).

fig. 17

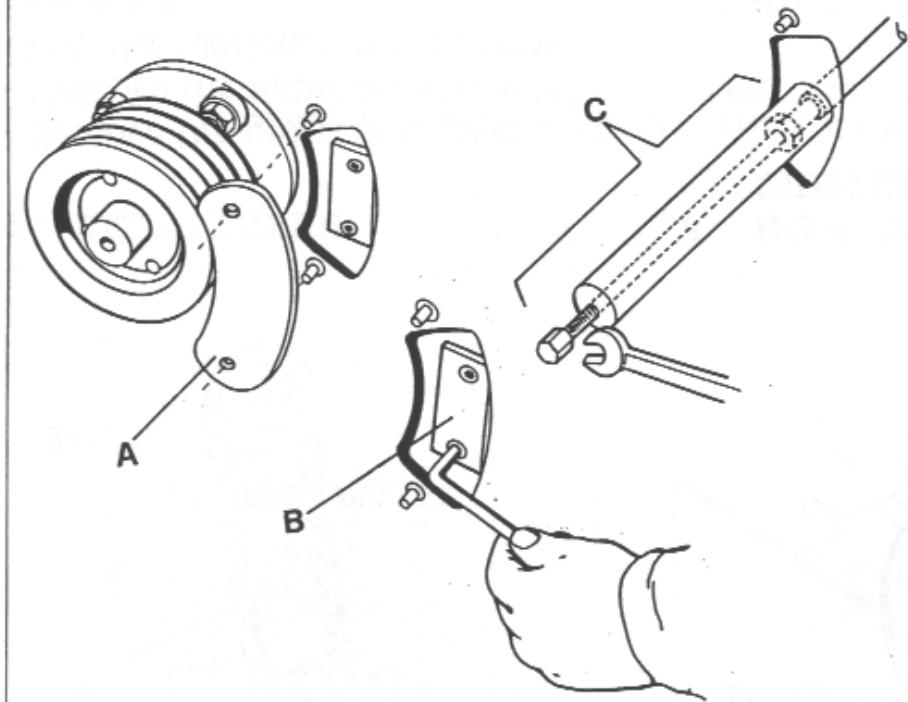
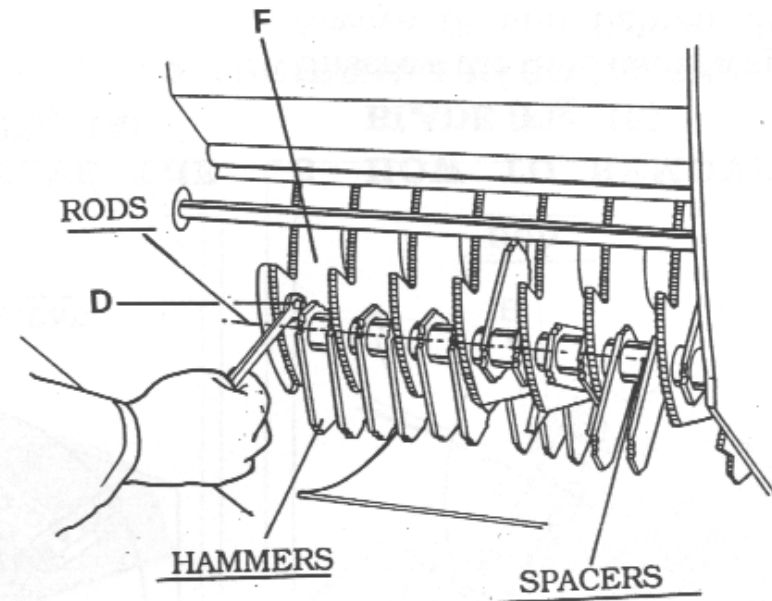


fig. 16



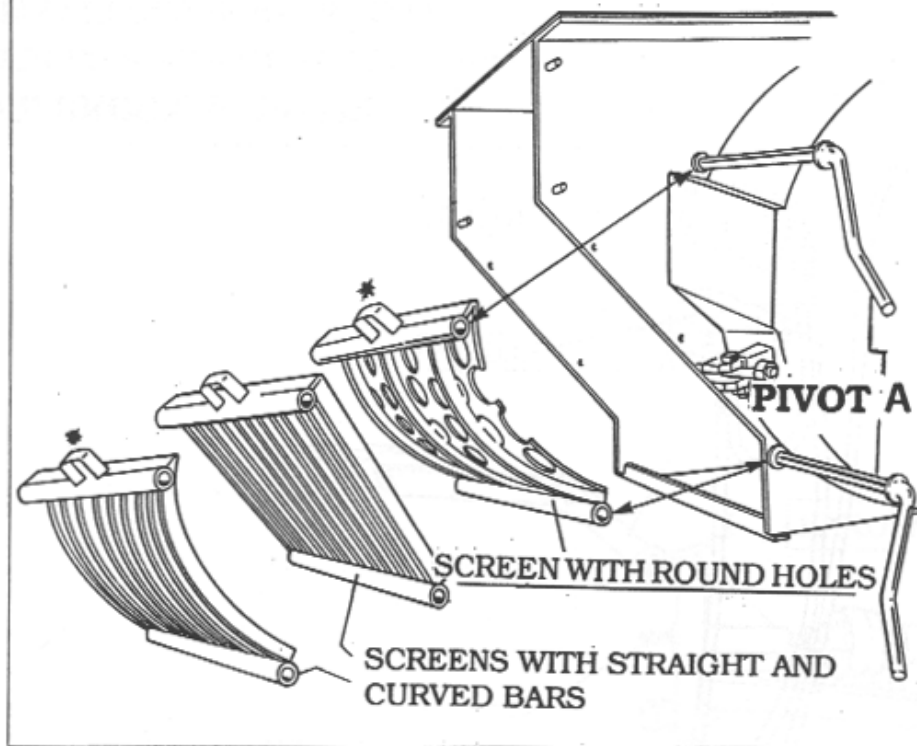
## 7. HOW TO REPLACE THE HAMMERS (Figs. 16-17)

- Remove the belt guard.
- Remove the centrifuge by unscrewing screw M20 (tractor version).
- Remove the belt cover.
- Unscrew and remove the cap (A).
- Unscrew and remove the plate (B) and loosen the counter-nut (D).

- Mount the extractor (C)\* optional extras and tap each disk (F) with a hammer to remove the rod.
- When you remove the rod, you free the hammer and spacers. Remember to replace the exact original position.

\* Optional extras

fig. 18

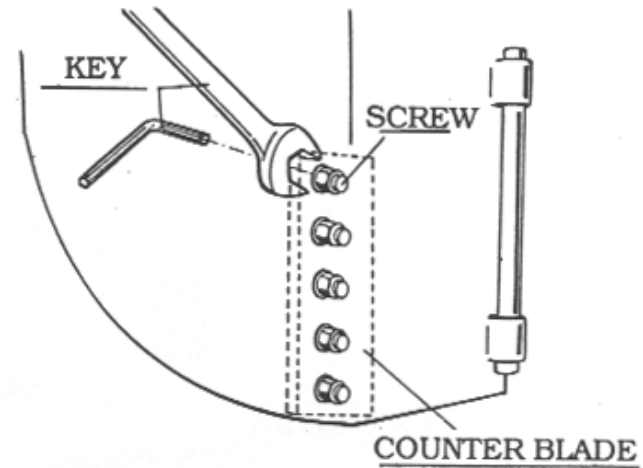


**8. HOW TO REPLACE THE SCREEN OR CLEAR  
(Fig. 18)**

- Pull out the pins and remove the screen. Fit a bar screen when shredding wet material.

\* Optional extras

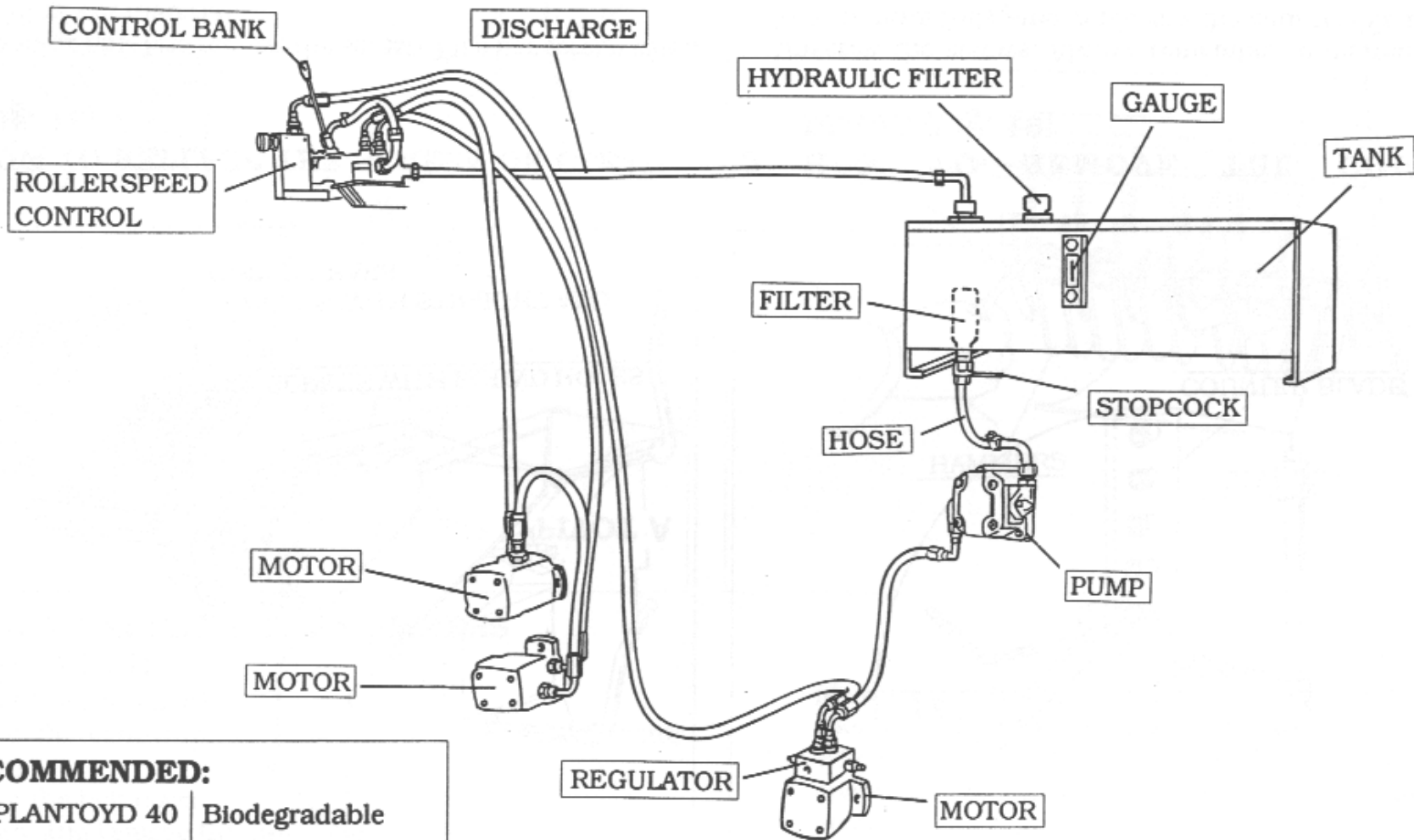
fig. 19



**9. HOW TO REMOVE THE COUNTER-  
BLADE (Fig. 19)**

- Unscrew the screws. Always remember to tighten the self-locking nuts fully after replacing the counter-blade.

## 9. HYDRAULIC SYSTEM (Diesel & Tractor Versions)



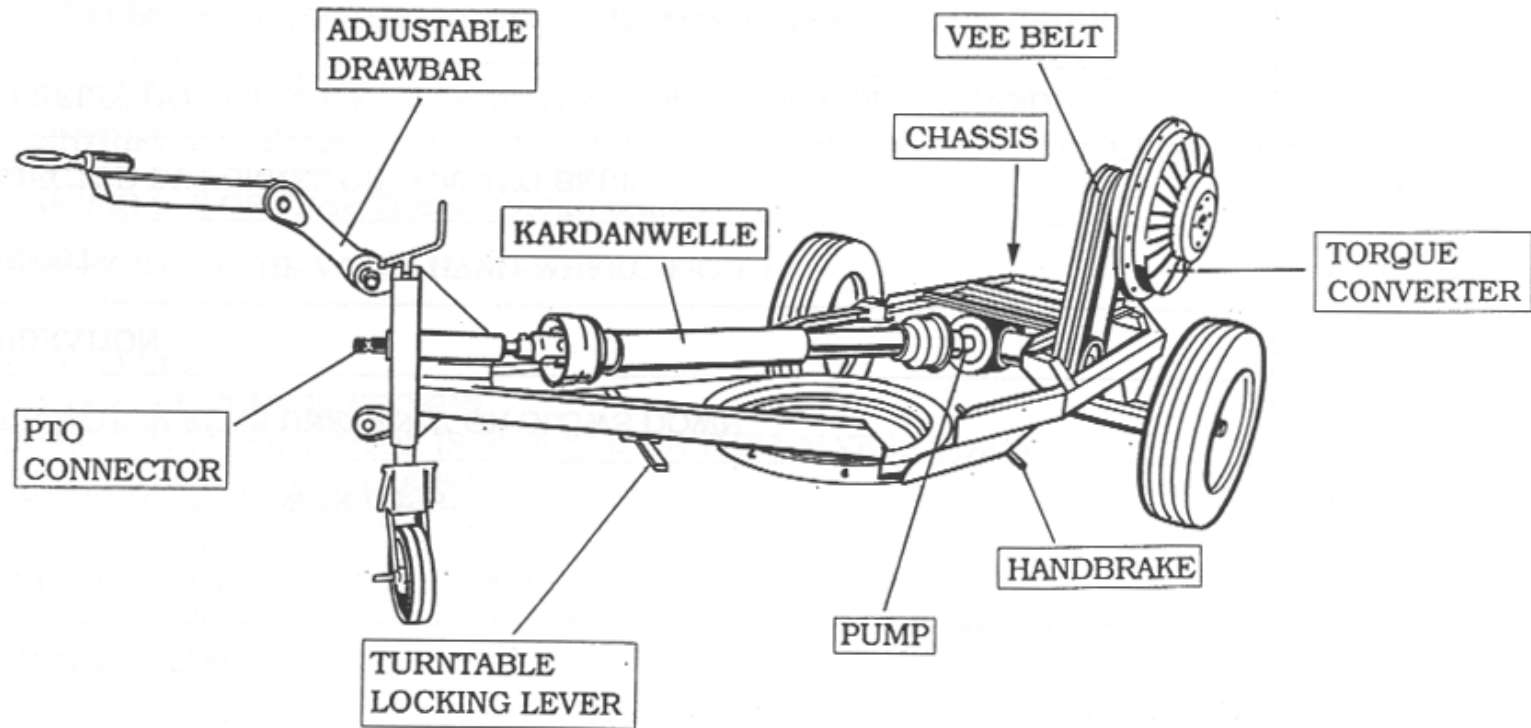
### OIL RECOMMENDED:

- |                      |               |
|----------------------|---------------|
| * FUCHS PLANTOYD 40  | Biodegradable |
| * FINA NEOLUBE RS 38 | Ecological    |
| * AGIP ARNICA 46     |               |
| * ESSO INVAROL 46 EP |               |

REPLACE EVERY 1000 HOURS OF WORKS



## 10. TRACTOR TRAILER AND TRANSMISSION



## 11. TROUBLE-SHOOTING

	PROBLEM	CHECKS
1	BIO-SHREDDER DOES NOT START UP	C + E + H
2	MOTOR DOES NOT START UP	E
3	ROTOR DOES NOT TURN WITH MOTOR RUNNING	A + C + H
4	TROUBLE STARTING UP OR POWER LOSS	A + C + E + F
5	BIO-SHREDDER MOTOR RUNS UNEVENLY OR SLOWS DOWN	A + B + D + F + H
6	EXCESSIVE VIBRATION	G
7	REDUCED OUTPUT	A + B + D
8	MATERIAL REJECTED BY FUNNEL OR LOADING BELT	B + D
9	ROLLERS AND BELTS DO NOT MOVE EVEN WITH MOTOR AND ROTOR RUNNING:	
	A. UNDER PRESSURE (MOTOR OR TRACTOR SLOW DOWN)	I
	B. NOT UNDER PRESSURE	M
10	DROP IN FEEDING AND UNLOADING SPEED	N
11	LOADING AND UNLOADING BELTS OUT OF LINE	O
12	EXCESSIVE WEAR OF LOADING AND UNLOADING BELTS	P
13	EXCESSIVE WEAR OF BLADES AND HAMMERS	F

## REASONS AND WHAT TO DO

- A CHECK TENSION AND CONDITION OF BELT, PULLEYS, POWER TAKE-OFF AND GEARS.
- B CHECK THE HAMMERS, BLADES AND COUNTER-BLADES FOR WEAR.
- C REMOVE ANY MATERIAL FROM THE GRINDING CHAMBER.
- D CHECK THE SCREEN IS FREE.
- E CHECK THE MOTOR OR TRACTOR (SEE BOOKLETS).
- F CHECK THE MATERIAL BEING SHREDDED, THE TYPE OF SCREEN OR/AND REDUCE FEED SPEED IF TOO HIGH.
- G REPLACE ROTOR HAMMERS AND/OR BLADES IF WORN OR BROKEN. UNCLOG IF NECESSARY.
- H CHECK THE CENTRIFUGE (SEE BOOKLET). CHECK THE OVERGEAR IN THE TRACTOR VERSION.
- I OPEN VALVE RF (FIG.6-7) OR FREE THE MOTORS/BELTS.
- L REDUCE FEED SPEED VIA THE VALVE HAND-WHEEL (FIG.7.).
- M CHECK:
  - a THE OIL LEVEL.
  - b WHETHER THE PUMP IS BROKEN.
  - c WHETHER THE DISTRIBUTOR IS BLOCKED OR THE VALVE IS SLACK.
  - d WHETHER THE OIL TANK COCK IS CLOSED.
  - e WHETHER THE OIL HAS LOST ITS VISCOSITY.
  - f FOR ANY BROKEN PIPES.
- N OIL RUN DOWN AT HIGH TEMPERATURE (MAX 80°C). PUMP DAMAGED AND FAILS TO REACH PRESSURE. BELTS AND ROLLERS HINDERED BY MATERIAL: CLEAN SCRAPERS THOROUGHLY.
- O BELT FABRIC WORN OR BROKEN. SUPPORTS BROKEN, TENSIONERS DAMAGED OR BROKEN. ALIGN TENSION ROLLERS. FOR THE UNLOADING BELTS, CHECK SCREW IN THE CENTRE. (SEE FIG.4.).
- P ALIGN BELTS VIA THE TENSIONERS. CHECK DRIVE ROLLERS. CHECK COUNTER-FINGERS AT ENTRANCE. REMOVE ANY MATERIAL BETWEEN BELTS AND FRAME. CHECK THE BELTS ARE NOT OUT OF THE GUIDES OR HOLDERS.

## 12. MAINTENANCE SCHEDULE

	START OF EVERY SEASON	START OF EVERY START-UP	AFTER EVERY USE
1 •CHECK DIESEL ENGINE AND PRIMARY TRANSMISSION FOR TRACTOR VERSION.		●	
2 •CHECK FOR OIL LEAKAGE FROM THE HYDRAULIC SYSTEM AND CENTRIFUGE. TOP UP IF NECESSARY.		●	
3 •CHECK SCREWS, GUARDS AND FUNNEL ARE SECURED PROPERLY.		●	
4 •CHECK BELT TENSION AND WEAR.	●	●	
5 •CHECK HAMMERS FOR WEAR.	●		
6 •CHECK BLADES FOR WEAR.		●	
7 •CHECK COUNTER-FINGERS FOR WEAR.	●		
8 • CHECK RUBBER FUNNEL GUARD.		●	●
9 •CLEAN MACHINE - GREASE - LUBRICATE AND PROTECT FROM ATMOSPHERIC CONDITIONS.			●
10 •CHECK BEARINGS AND DRIVE SHAFTS FOR WEAR.		●	●
11 •CHECK TROLLEY BRAKES.	●		●
12 •CHECK TYRE PRESSURE, TREAD AND HUB BEARINGS.	●		
13 •CHECK AXLE AND FIFTH WHEEL SECURING SCREW.	●		

## 13. COUPLING MAINTENANCE

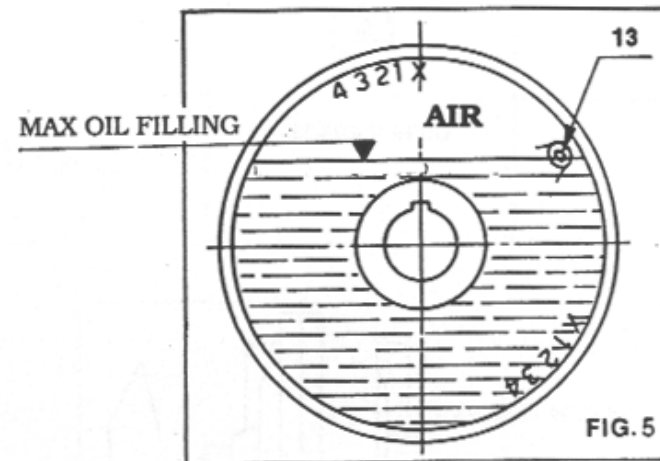
### 2. FILLING INSTRUCTIONS COUPLING KSD 11

When fluid couplings are supplied without oil, a correct filling procedure is necessary:

- 2.1. With the fluid coupling mounted in a horizontal plane (see fig. 2 and 3) turn the coupling so the X mark which is cast into the housing is at the top (maximum filling) which will ensure the filter/level plug item 13, is in the correct angular position as shown in fig. 5.
- 2.2. Fill with oil until it overflows out of the filter hole. During filling rock the coupling gently on its axis to ensure all excess air is vented from the circuit (table B).
- 2.3. To ensure no oil leaks from coupling during its operation use thread sealant on filler plug thread.
- 2.4. The different fillings X 1-2-3-4 can be selected at the users discretion to obtain a better performance from the coupling.  
With X fill (maximum) the fluid coupling will operate with minimal slip and maximum efficiency. The ratio starting torque/nominal torque will be at maximum. Be decreasing the couplings oil filling (1-2-3-4), the contrary occurs.
- 2.5. High values of slip decrease the units efficiency and will cause the oil to overheat.
- 2.6. At low ambient temperatures use **SAE 5 W** oil.

#### RECOMMENDED OIL: SAE 10 X

Agip: OSO 32  
Esso: NUTO H 32  
IP: HYDRUS OIL 32



#### OIL AMOUNT (lt)

X	1	2	3	4
2,75	2.55	2.35	2.1	1.85

STANDARD BIO 600

### 3. OPERATION AND MAINTENANCE

3.1 Start motor several times to check the coupling performance.

Maximum temperature should not exceed 90°C.

High oil operating temperature can be caused by:

- a) Insufficient oil filling.
- b) Absorbed power is higher than the motor rated power.
- c) High ambient temperature.
- d) Too frequent starts.
- e) Long starting time

3.2 After the first 20 days operation check the filling (this operation must be carried out with cold oil). Also check the motor and driven machine fixing screws.

3.3 Coupling is supplied with fusible plug at 175°C. If the fusible plug blows at regular intervals in normal service, then check a) in section 3.1 should be considered

3.4 Oil should be replaced after 4000 hours operation.

### 4. DISASSEMBLY

4.1 Screw threaded bar into tapped hole in end of fluid coupling and proceed as indicated in fig. 6. The threaded bar will push the coupling off the motor shaft.

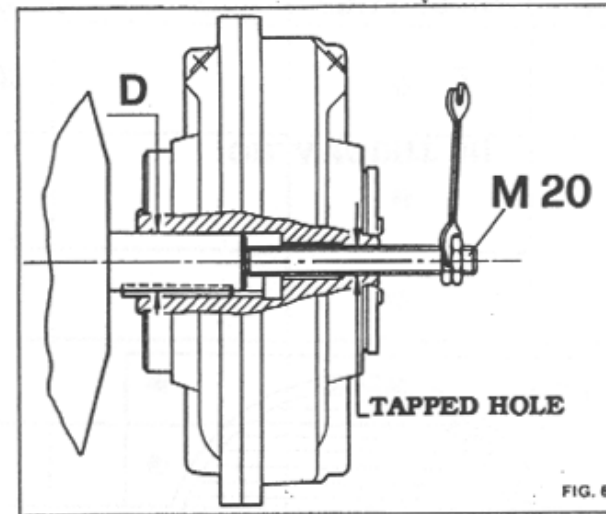


FIG. 6

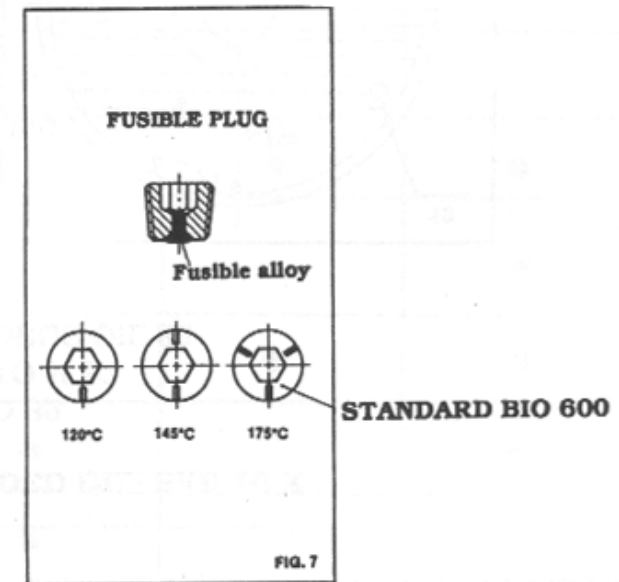


FIG. 7

## **SPARE PARTS AND DRAWINGS (Bio 600 Diesel - Tractor Versions)**

**Table 1 - INPUT CONVEYOR AND ROLLER.**

**Table 2 - SHREDDER ROTOR UNIT.**

**Table 3 - UNLOADING BELT.**

**Table 4 - DIESEL MODEL.**

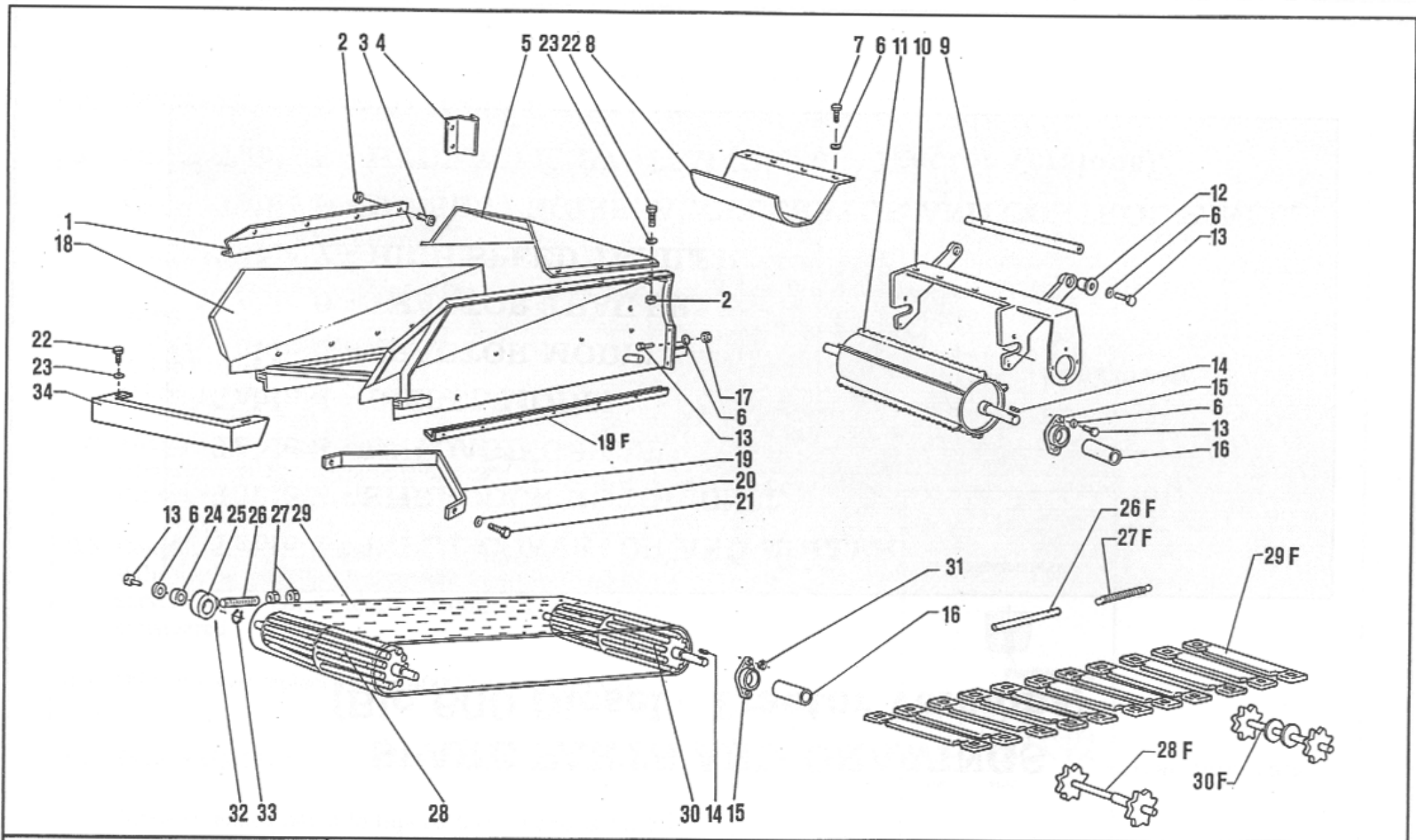
**Table 5 - TRACTOR MODEL.**

**Table 6 - TRACTOR TRAILER.**

**Table 7 - HIGH SPEED TRAILER.**

**Table 8 - DIESEL ENGINE, ACCELERATOR AND CONTROL PANEL.**

**Table 9 - HYDRAULIC SYSTEM (Diesel - Tractor Versions).**



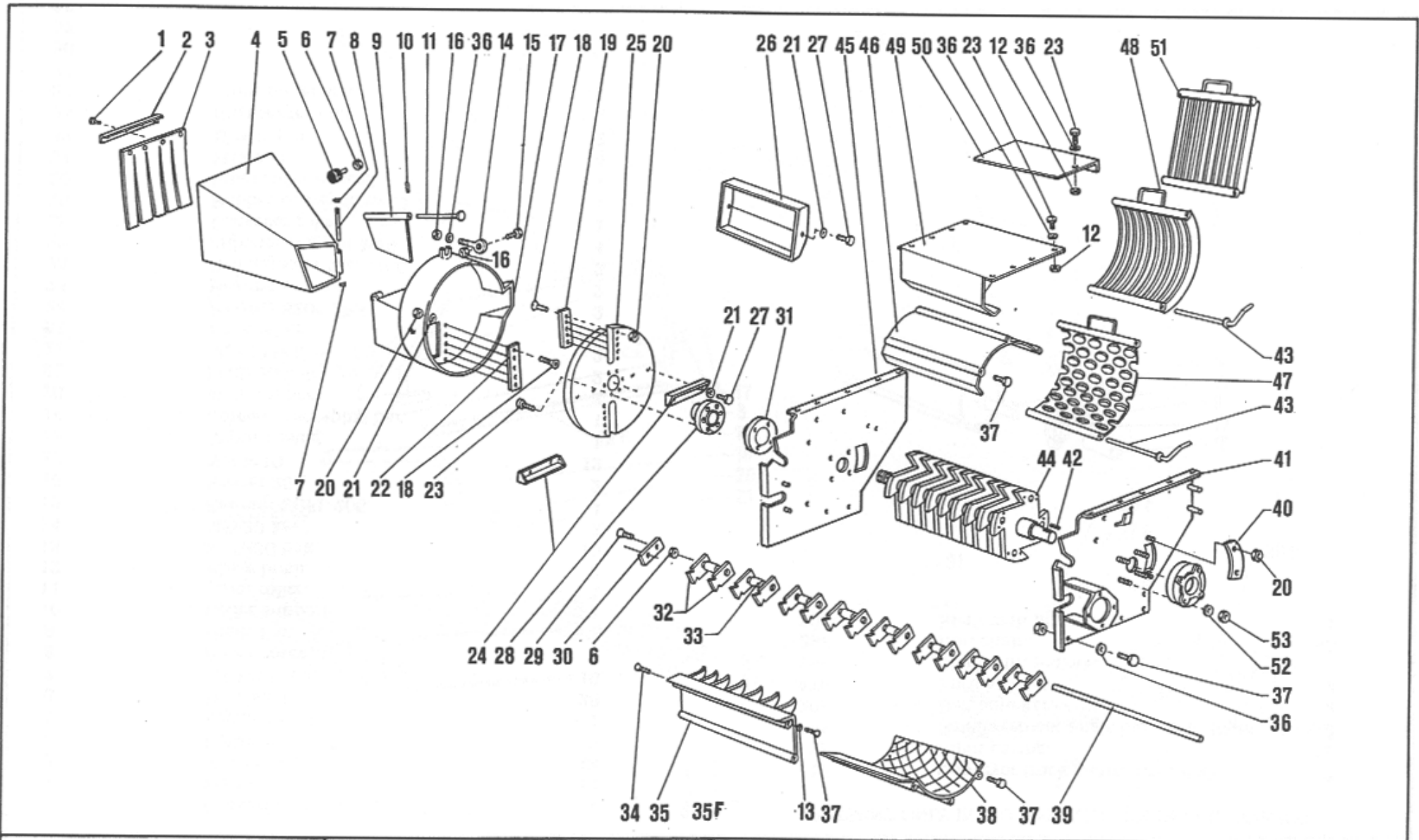
**BIO 600: Input conveyor and roller**

	<b>TABLE 1</b>
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# INPUT CONVEYOR AND ROLLER TABLE 1

POS.	DESCRIPTION	NUMBER	POS.	DESCRIPTION	NUMBER
			PRESENT ONLY IN BIO 600 WITH THE IRON CONVEYOR		
1	Conveyor track guard. Left/right.	2	1F	Conveyor track guard. Left/Right.	2
2	M8 nut.	12	18F	Input casing.	1
3	M8x25 bolt.	12	19F	Reinforcement angle bar. Left/Right.	2
4	Roller stop. Left/right.	2	26F	Belt adjuster.	2
5	Safety guard.	1	27F	Spring.	2
6	M10 washer.	28	28F	Shaft with pinions.	1
7	M10x25 bolt.	10	29F	Iron chain.	96
8	Roller cover.	1	30F	Shaft with pinions.	1
9	Hinge bar.	1			
10	Roller support.	1			
11	Input roller.	1			
12	Hinge bush.	2			
13	M10x30 bolt.	16			
14	M8x20 key.	2			
15	Bearing UCFL 205.	4			
16	Spacer 25.	2			
17	Nut M10.	12			
18	Input casing.	1			
19	Conveyor scraping bar.	1			
20	M12 washer.	2			
21	M12x30 bolt.	2			
22	M8x20 bolt.	2			
23	M8 washer.	2			
24	Bearing 6205 2RS.	2			
25	Bearing carrier.	2			
26	Belt adjuster M20x180.	2			
27	Adjuster rod nut M20.	4			
28	Conveyor roller.	1			
29	Rubber conveyor.	1			
30	Input roller control.	1			
31	M12 nut.	4			
32	Elastic pin.	2			
33	Ring seeger I 52.	2			
34	Input protection.	2			
35					
36					
37					
38					



**BIO 600: Shredder rotor unit**

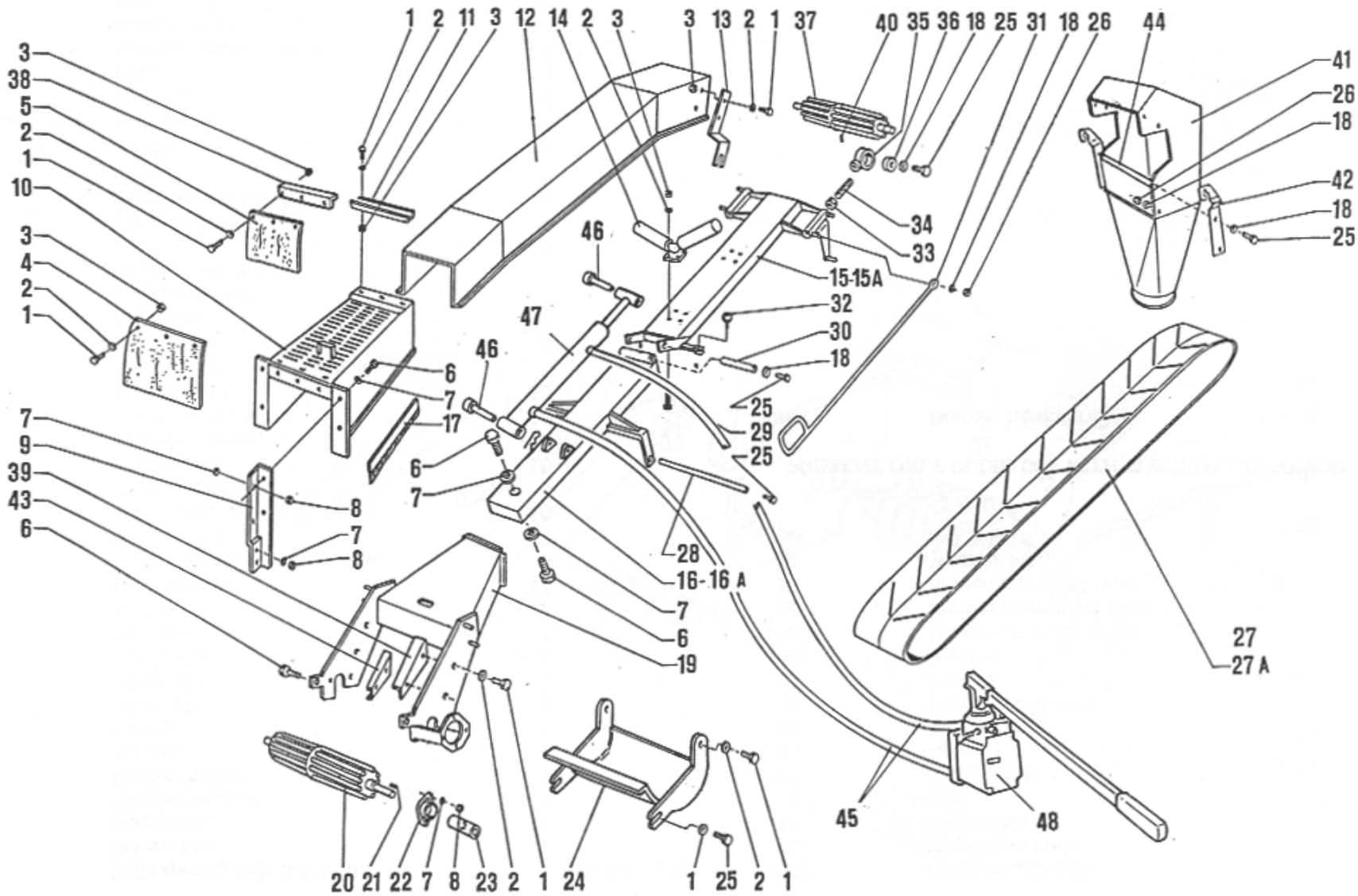
**TABLE 2**

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# SHREDDER ROTOR UNIT

# TABLE 2

POS.	DESCRIPTION	NUMBER	POS.	DESCRIPTION	NUMBER
1	Self tapering belt 6.3 x 19.	4	39	Hammermill rods.	4
2	Screen bar.	1	40	Inspection cover.	2
3	Safety flap.	1	41	Side frame.	
4	Chipper hopper.	1	42	Key.	2
5	Rubber buffer.	1	43	Screen rods.	2
6	M8 nut.	1	44	Rotor.	1
7	Circlip.	1	45	Frame body.	1
8	Hinge pin.	1	46	Hammermill cover.	1
9	Hinge pin.	1	47	Screen.	7
10	Safety flap.	1	48	Screen.	1
11	Flap pin.	1	49	Hammermill top cover.	1
12	M12 nut.	12	50	Screen inspection plate.	1
13	M12 washer.	11	51	Screen standard type.	1
14	M12 chipper retaining clips.	3	52	Washer M16.	8
15	M12x60 bolt.	2	53	Nylok M16.	8
16	M12 nylok	16			
17	Chipper body.	1			
18	Blade bolts.	10		PRESENT ONLY IN BIO 600 WITH THE IRON CONVEYOR	
19	Chipper blades.	2			
20	Blade nyloks M10.	10	35F	Bottom hammer blade.	1
21	M10 washers.	10			
22	Anvil blade.				
23	Anvil bolts.	5			
24	Impellers.	2			
25	Chipper wheel.	1			
26	Internal box support.	1			
27	Bolts.	6			
28	Chipper boss.	1			
29	Hammer rod bolt M8x15.	8			
30	Plate.	2			
31	Bearing.	2			
32	Hammers.	64			
33	Spacers.	32			
34	Bolt.	1			
35	Bottom hammer blade.	1			
36	Washer M12.	7			
37	Bolt.	14			
38	Hammermill bottom plate.	1			



**BIO 600: Unloading belt**

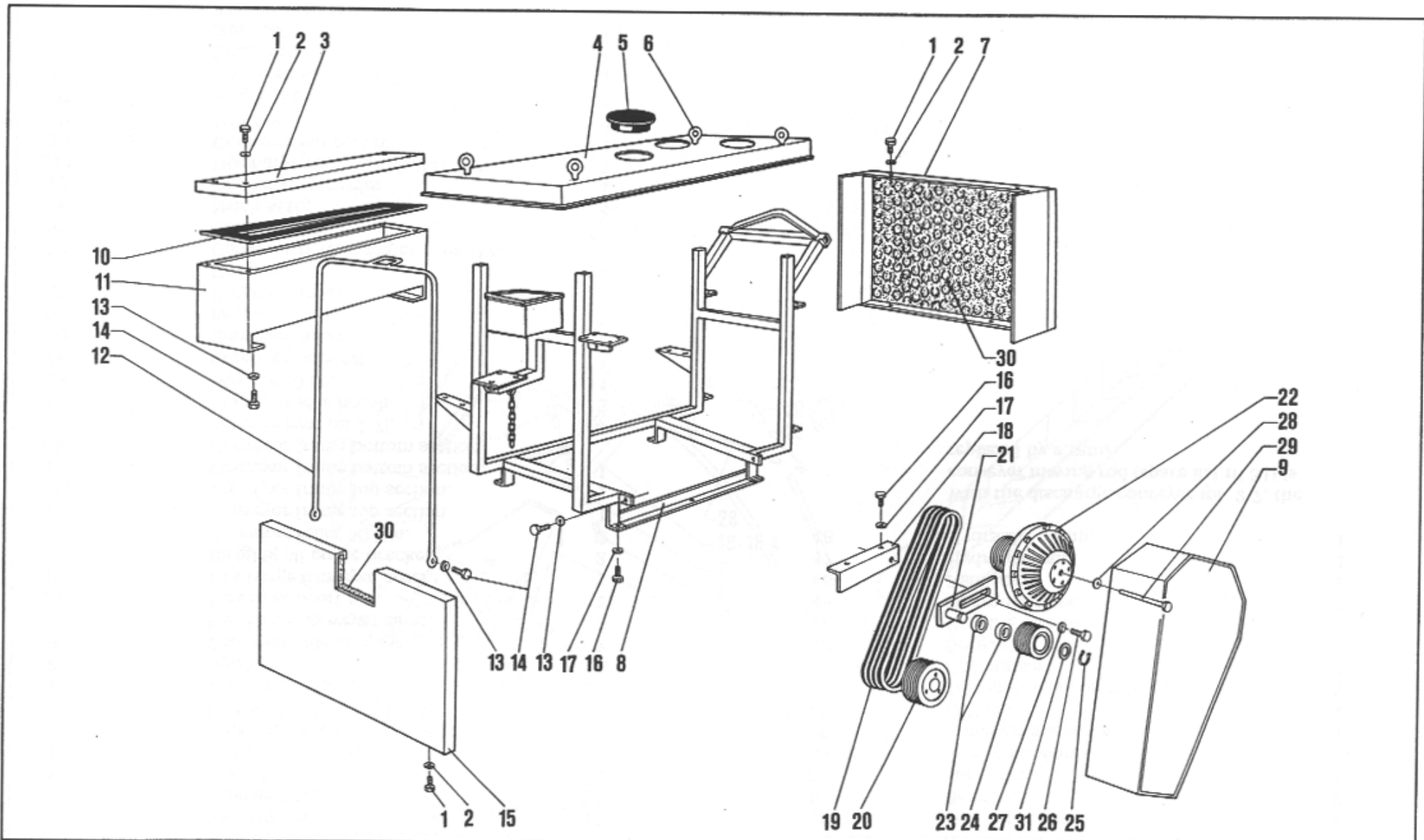
**TABLE 3**

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# UNLOADING BELT TABLE 3

POS.	DESCRIPTION	NUMBER	POS.	DESCRIPTION	NUMBER
1	Bolt M8 x 30.	18	35	Bearing support.	2
2	Washer 8 Dia.	22	36	Bearing.	2
3	Nylok M8.	22	37	Top roller.	1
4	Outer safety screen.	1	38	Screen support.	1
5	Inner safety screen.	1	39	Conveyor supports.	2
6	Bolt M12x40.	8	40	Roll pin.	2
7	Washer 12 Dia.	21	41	Top cover bagging off chute.	1
8	Nylok.	16	42	Bag support.	2
9	Conveyor side support.	2	43	Support bracket.	2
10	Discharge conveyor cover.	1	44	Bagging off chute.	1
11	Screen support bar.	1	45	Hydraulic hose.	2
12	Discharge conveyor cover.	1	46	Ram pivot.	2
13	Bagging off chute bracket.	2	47	Hydraulic ram.	1
14	Conveyor roller 50 Dia.	2	48	Hydraulic pump.	1
15	Conveyor frame top section.	1			
15A	Conveyor frame top section.	1			
16	Conveyor frame bottom section.	1			
16A	Conveyor frame bottom section (for conveyor mt 2.7).	1			
17	Conveyor side brush.	2			
18	Washer 10 Dia.	11			
19	Conveyor support.	1			
20	Conveyor roller.	1			
21	Key.	1			
22	Bearing carrier.	2			
23	Coupler.	1			
24	Conveyor bottom material catcher.	1			
25	Bolts M10x30.	14			
26	Nylok M10.	4			
27	Discharge conveyor.	1			
27A	Discharge conveyor mt. 2.7.	1			
28	Conveyor support rod.	1			
29	Bolt M8x100.	4			
30	Hinge pin.	1			
31	Conveyor moving rod.	1			
32	Linch pin.	1			
33	Nut M20.	4			
34	Adjuster rod M20 x 250.	2			

With the discharge conveyor mt. 2.7, the conveyor moving rod (spare list n° 31) is replaced by a ram.



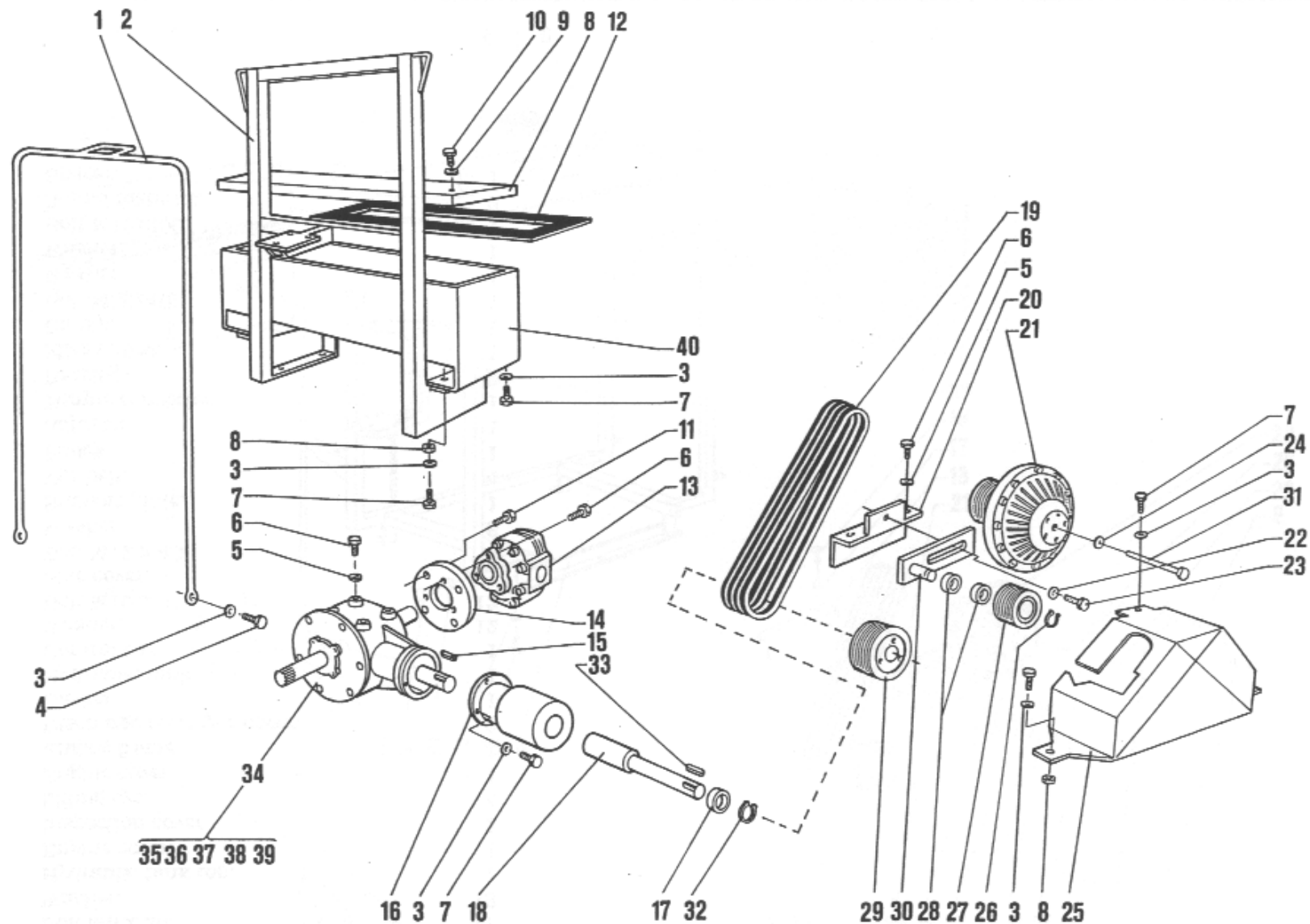
**BIO 600: Diesel Model**

**TABLE 4**

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**DIESEL MODEL      TABLE 4**

<i>POS.</i>	<i>DESCRIPTION</i>	<i>NUMBER</i>
1	Bolt M8 x 20.	17
2	Washer.	18
3	Hydraulic tank top.	1
4	Engine cover.	1
5	Inspection cover.	2
6	Lifting eye.	4
7	Engine cover.	1
8	Engine frame.	1
9	Discharge conveyor cover.	3
10	Gasket.	1
11	Hydraulic tank.	1
12	Control bar.	1
13	Washer.	12
14	Bolt M10x30.	12
15	Side cover.	1
16	Bolt M12 x 40.	6
17	Washer.	6
18	Support plate.	1
19	Vee belt.	4
20	Pulley.	1
21	Adjuster.	1
22	Torque converter.	1
23	Bearings.	2
24	Idler pulley.	1
25	Circlip.	1
26	Bolt M20x40.	1
27	Washer.	1
28	Washer.	1
29	Bolt M12x200.	1
30	Sound material.	2
31	Spacer.	1

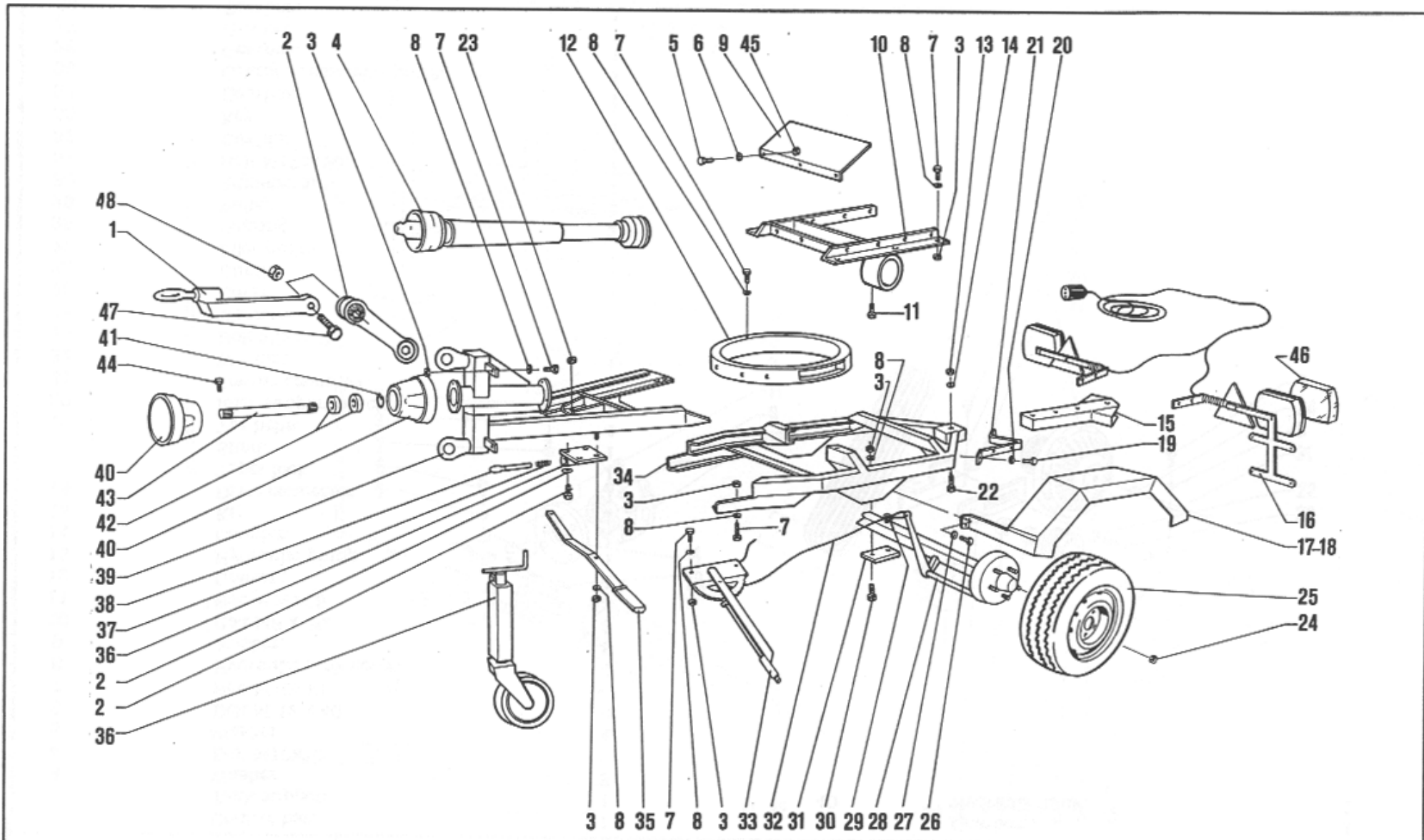




## TRACTOR MODEL

## TABLE 5

POS.	DESCRIPTION	NUMBER	POS.	DESCRIPTION	NUMBER
1	Control bar.	1	39	Gearbox.	1
2	Tank support.	1	40	Hydraulic tank.	1
3	Washer.	8			
4	Bolt M10x30.	2			
5	Washer.	4			
6	Bolt M 12 x 40.	4			
7	Bolt M10x40.	4			
8	Hydraulic tank cover.	4			
9	Washer.	8			
10	Bolt M8 x 20.	8			
11	Bolt M10x25.	3			
12	Gasket .	1			
13	Hydraulic pump.	1			
14	Coupler.	1			
15	Key.	1			
16	Drive connector.	1			
17	Taper lock.	1			
18	Shaft.	1			
19	Vee belts.	4			
20	Idler support bracket.	1			
21	Torque converter.	1			
22	Washer.	1			
23	Bolt M20x10.	1			
24	Washer.	1			
25	Cover.	1			
26	Circlip.	1			
27	Idler pulley.	1			
28	Bearing.	2			
29	Pulley.	1			
30	Adjuster arm.	1			
31	Bolt M12x180.	1			
32	Circlip.	1			
33	Key.	1			
34	Gearbox.	1			
35	Gearbox repairable parts.	1			
36	Gearbox.	1			
37	Gearbox.	1			
38	Gearbox.	1			



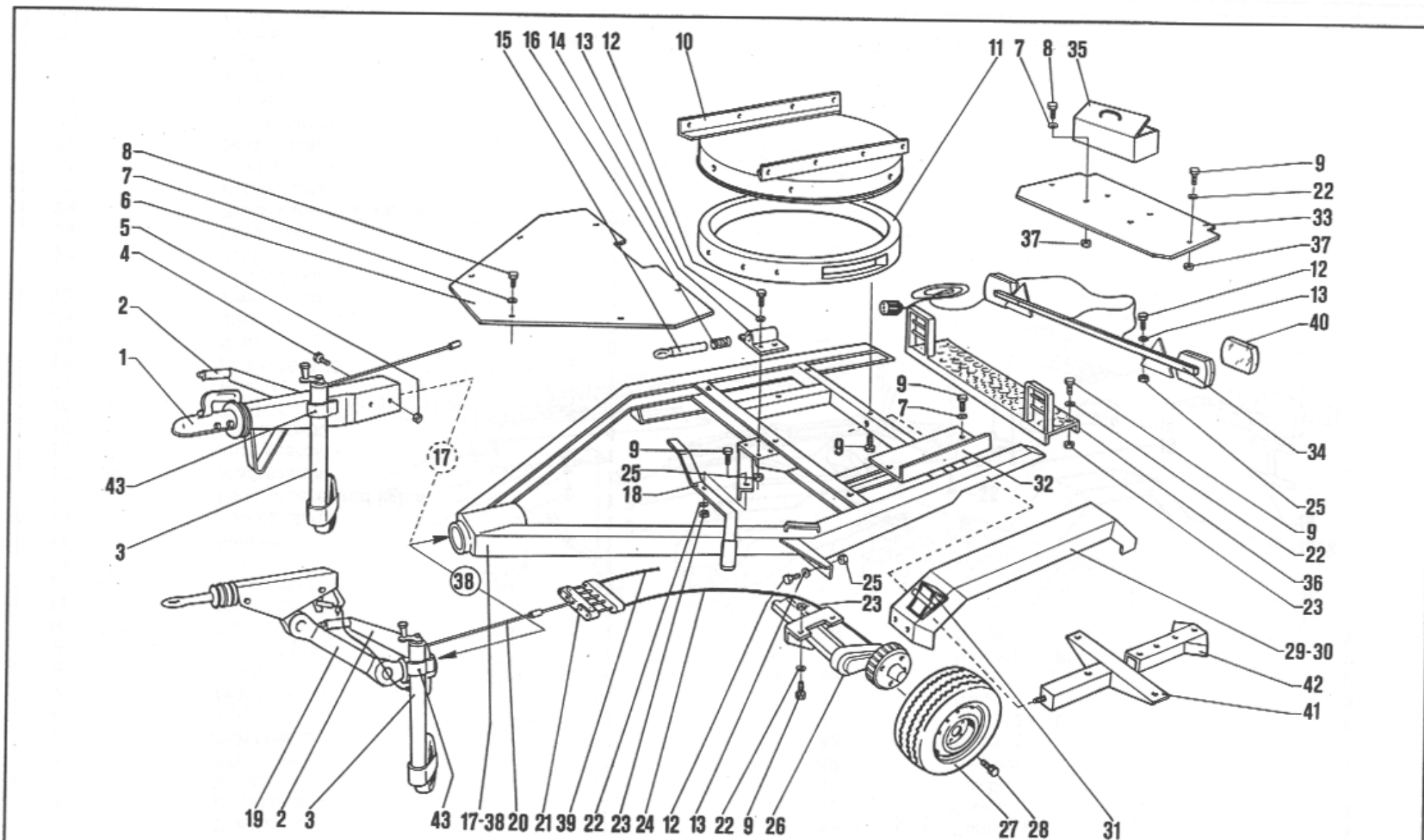
**BIO 600: Tractor trailer**

	<b>TABLE 6</b>
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# TRACTOR TRAILER

# TABLE 6

POS.	DESCRIPTION	NUMBER	POS.	DESCRIPTION	NUMBER
1	Drawbar outer.	1	39	Control pin.	1
2	Drawbar inner.	2	40	Guard.	2
3	Nylok.	18	41	Circlip.	2
4	PTO shaft.	1	42	Bearing	2 + 2
5	Bolt M8x15.	3	43	Bearing.	1
6	Washer.	3	44	Bolt M8 x 20.	6
7	Bolt M12x35.	14	45	Nylok.	3
8	Washer.	18	46	Lens.	2
9	Support plate.	1	47	Bolt M20 x 80.	2
10	Turntable.	1	48	Nylok.	2
11	Bolt M12x30.	1			
12	Turntable ring.	1			
13	Nut.	1			
14	Washer.	1			
15	Towing plate.	1			
16	Light bracket and lights.	1			
17	Mud guards.	1			
18	Mud guards.	1			
19	Bolt M10x30.	4			
20	Washer.	4			
21	Bracket.	2			
22	Bolt M16x120.	1			
23	Nylok.	8			
24	Whel nut.	10			
25	Tyre & wheel.	2			
26	Bolt M10x25.	8			
27	Brake.	1			
28	Brake rod.	1			
29	Brake cable bulldog.	2			
30	Bolt M12x90.	4			
31	Support plate.	2			
32	Brake cable.	2			
33	Brake handle.	1			
34	Chassis.	1			
35	Turntable lever.	1			
36	Jockey wheel.	1			
37	Spring.	1			
38	Control spring.	1			



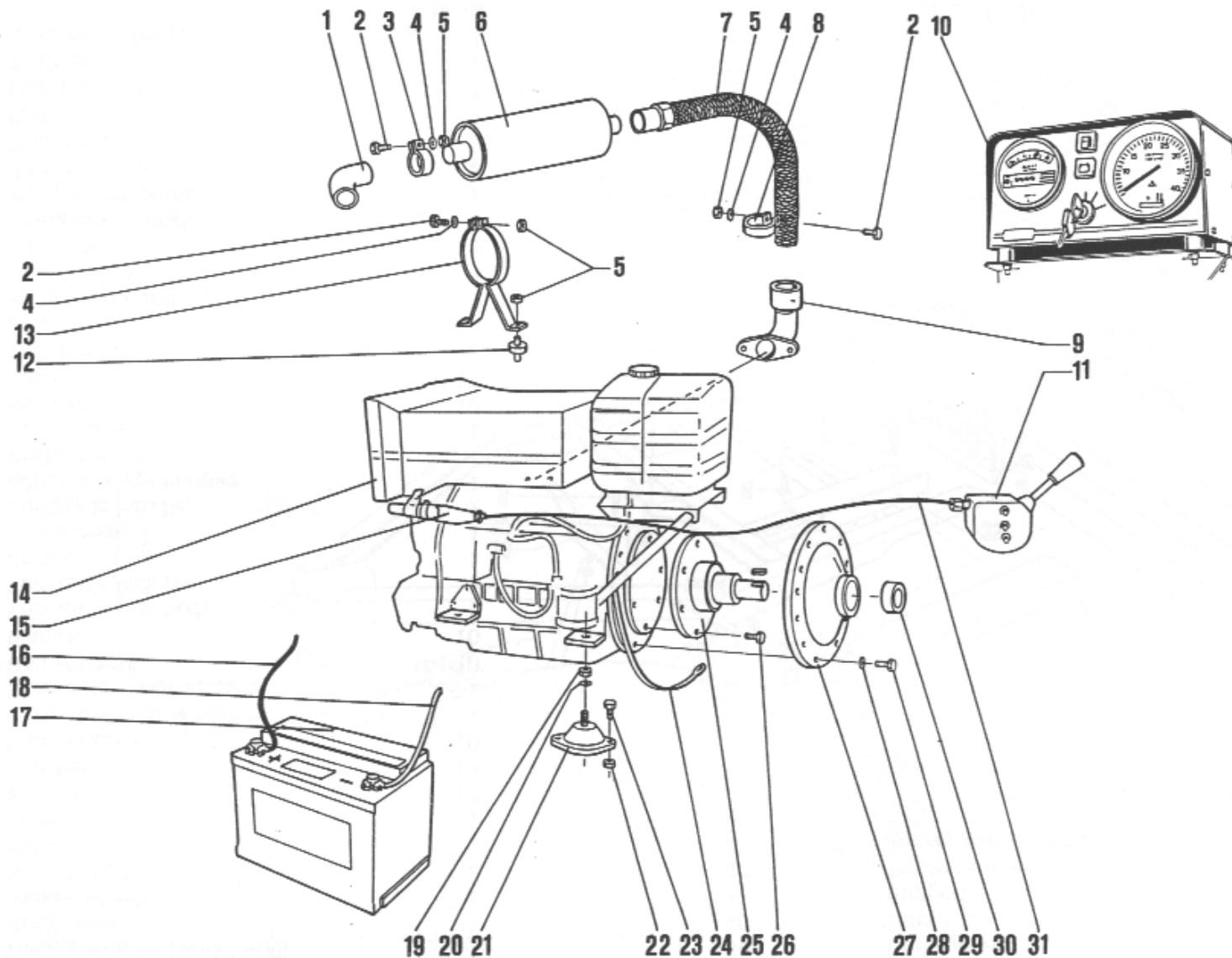
**BIO 600: High speed trailer**

<b>TABLE 7</b>	
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# HIGH SPEED TRAILER

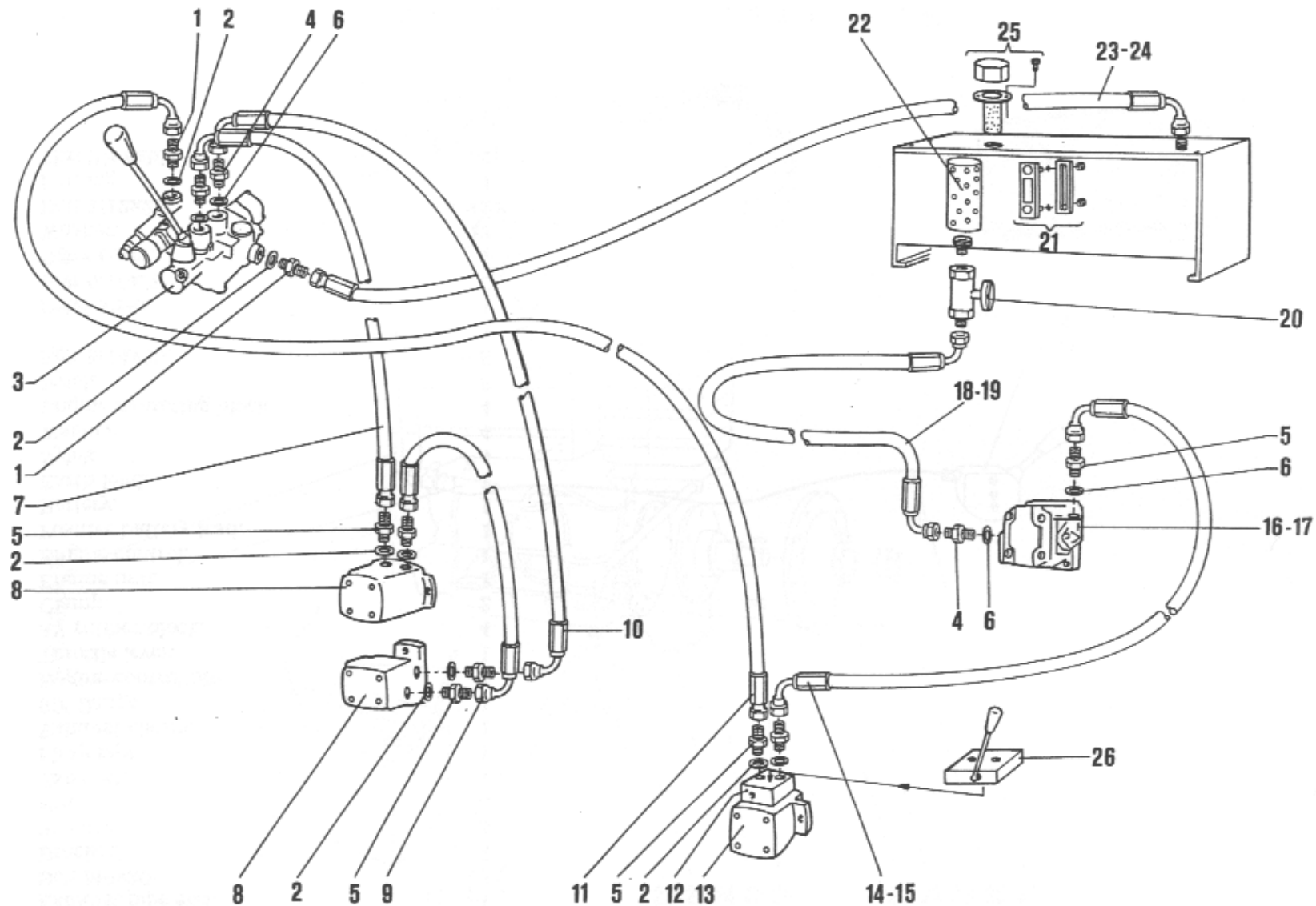
# TABLE 7

POS.	DESCRIPTION	NUMBER	POS.	DESCRIPTION	NUMBER
1	Towing coupler (Model 400).	1	39	Brake cable.	2
2	Handbrake.	1	40	Lens.	2
3	Jockey wheel.	1	41	Support.	1
4	Bolt M14x120.	2	42	Trailer coupler.	1
5	Nylok.	2	43	Jockey wheel clamp.	1
6	Plate.	1			
7	Washer.	15			
8	Bolt M8x15.	15			
9	Bolt M12x35.	19			
10	Turntable - top section.	1			
11	Turntable - base section.	1			
12	Bolt M10x35.	10			
13	Washer.	10			
14	Turntable lock body.	1			
15	Turntable lock pin.	1			
16	Spring.	1			
17	Box section.	1			
18	Turntable handle.	1			
19	Adjustable eye coupler.	1			
20	Brake rod.	1			
21	Brake compensator.	1			
22	Washer.	19			
23	Nylok.	11			
24	Brake cable.	2			
25	Nylok.	14			
26	Suspension unit.	2			
27	Tyre & wheel.	4			
28	Wheel bolt.	16			
29	Mudguards (single).	1			
30	Mudguards (twin).	1			
31	Wheel chocks.	2			
32	Tidy plate.	2			
33	Plate.	1			
34	Lighting board.	1			
35	Toolbox.	1			
36	Light protector plate.	1			
37	Nylok.	8			
38	Drawbar tube.	1			



# DIESEL ENGINE, ACCELERATOR AND CONTROL PANEL TABLE 8

<i>POS.</i>	<i>DESCRIPTION</i>	<i>NUMBER</i>
1	Exhaust pipe end.	1
2	Bolt M8x20.	3
3	Bracket.	2
4	Washer.	3
5	Nut.	3
6	Exhaust.	1
7	Flexy pipe.	1
8	Exhaust clamp.	1
9	90° flange.	1
10	Engine control box.	1
11	Throttle lever.	1
12	AV rubber block.	4
13	Clamp.	2
14	Engine unit.	1
15	Engine control.	1
16	Positive battery lead.	1
17	Battery.	1
18	Earth lead.	1
19	Nylok.	4
20	Washer.	4
21	Engine mounting block.	4
22	Nylok.	8
23	Bolt M14x35.	8
24		1
25	Drive shaft.	1
26	Bolt M10x30.	6
27	Drive cover.	1
28	Washer.	12
29	Bolt M12x25.	12
30	Bearing.	1
31	Throttle cable.	1





# HYDRAULIC SYSTEM (Diesel & Tractor Version) TABLE 9

POS.	DESCRIPTION	NUMBER
1	Nipple.	2
2	Nipple.	3
3	Control bank.	1
4	Nipple.	8
5	Nipple.	3
6	Brass/Doughty washer.	8
7	Hose.	1
8	Hydraulic motor.	2
9	Hydraulic hose to motor.	1
10	Return hose to motor 2.	1
11	Hydraulic control bank.	1
12	Hydraulic block.	1
13	Hydraulic motor.	1
14	Hydraulic hose to pump (Diesel).	1
15	Hydraulic hose to pump (Tractor).	1
16	Pump (Diesel).	1
17	Pump (Tractor) .	1
18	Hose to tank (Diesel).	1
19	Hose to tank (Tractor).	1
20	Shut off valve.	1
21	Sight gauge.	1
22	Hydraulic filter.	1
23	Hose to control bank (Diesel).	1
24	Hose to control bank (Tractor).	1
25	Hydraulic filter complete.	1
26	Bypass valve.	1

## 14. DECLARATION OF CONFORMITY



The company Caravaggi, hereby declares under its own responsibility, that the machine BIO SHREDDER Type Bio 600 electric, diesel and PTO model, complies with the Basic Safety and Health Requirements prescribed in EC Directive 89/336 and 89/392 and subsequent modifications thereto 91/368, 93/44 and 93/68.

The Manufacturer

  
(CARAVAGGI GIANLORENZO)

## FILL IN

- Date of start-up: \_\_\_\_\_
- Seller: \_\_\_\_\_
- Owner: \_\_\_\_\_
- Serial number: \_\_\_\_\_
- Version: \_\_\_\_\_

## WHEN REQUESTING SPARES, SPECIFY:

- 1 - Type of machine
- 2 - Serial number
- 3 - Means of despatch required
- 4 - Full address of applicant
- 5 - Description of spare(s)

Example: Table. 1      Posn. 10      Q.ty 1      Inlet roller support

**N.B.: All goods will be sent ex-factory. All transport charges are payable by the applicant.**



Via Monte Adamello n. 20 - I - 25037 PONTOGLIO - BS  
Tel. 030/7470464 - Fax 030/7470004

The manufacturer reserves the right to modify anything herein without prior notice. Copyright 1992. All rights reserved.

## GENERAL WARRANTY

### WARRANTY

1. The Manufacturer hereby guarantees its BIO-SHREDDERS against breakage caused by faulty materials or workmanship.
2. This warranty is valid for the first owner only for six (6) months as from the date of purchase and/or delivery.
3. The Manufacturer is entitled to inspect the Bio-Shredder and any components for which a claim has been made under the guarantee, in order to determine the validity of the claim.
4. This warranty covers replacement free of charge only of components found to be defective due to faulty materials or workmanship under the guarantee period.
5. This warranty does not cover reimbursement for labour, consumables or transport charges for repairs under guarantee.

### THIS WARRANTY DOES NOT APPLY IN THE FOLLOWING CASES

1. The Manufacturer may in no way held liable for general damage, including damage or injury, loss due to halts in production, loss of earnings, leasing costs or any moral or commercial damage.
2. All claims concerning motors or engines mounted on Bio-Shredders will be handled by the relevant Manufacturers' after-sales service.
3. This warranty does not cover damage caused by misuse, abuse, insufficient maintenance, accident or damage caused during transport.
4. Parts which are subject to wear, such as hammers, blade, anvil blades, etc. are not covered under this guarantee.
5. All expenses for setting the machine to work will be charged to the distributor or dealer.
6. This warranty is not valid if the repairs, maintenance or modifications are performed by unauthorised persons or dealers.
7. The owner is responsible for routine maintenance and settings, which are thus excluded herefrom.
8. The use or fitting of components and accessories that are not original will immediately invalidate this warranty.

### PROCEDURE FOR MAKING CLAIMS UNDER THIS WARRANTY

If the Bio-Shredder is found to be defective due to faults material or workmanship, you are required to send the Manufacturer a written claim and proceed as follows:

1. The machine must be returned to the Seller or the authorised CARAVAGGI importer.
2. You are required to present the guarantee duly filled in or the bill, if this is not available.
3. The Claim will be completed by the Dealer, who will forward it to the Manufacturer.
4. The Manufacturer alone reserves the right to determine whether to accept the claim or otherwise.
5. Any disputes will be put before the Court of Brescia, Italy.